FIG. 1

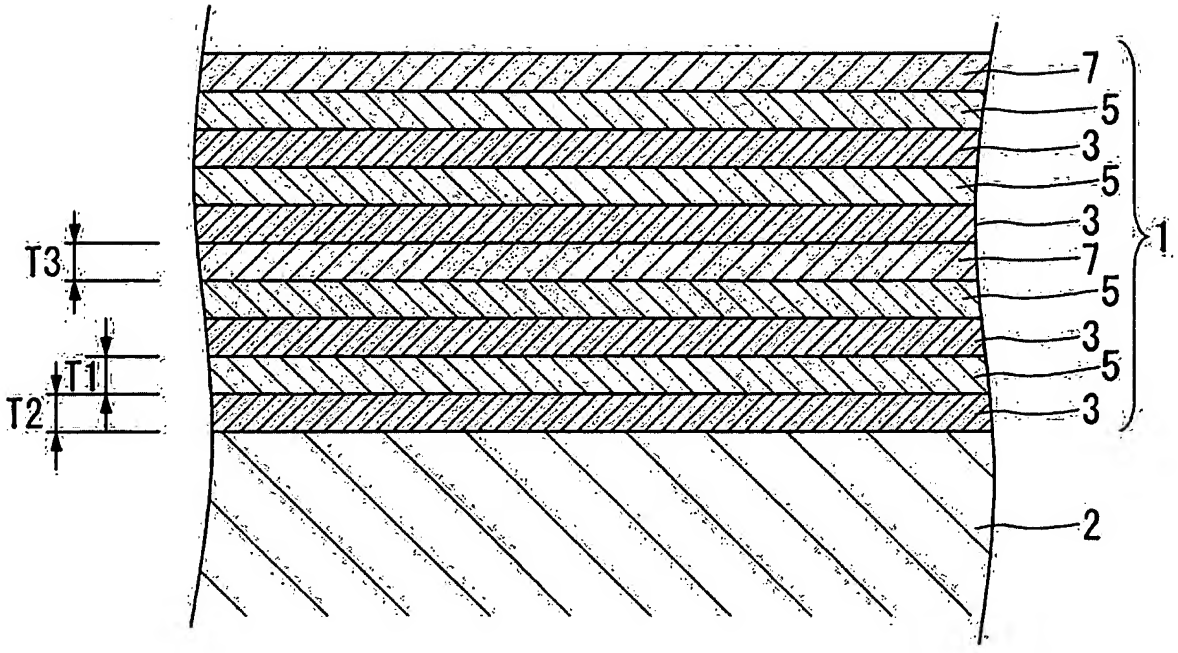

FIG. 2

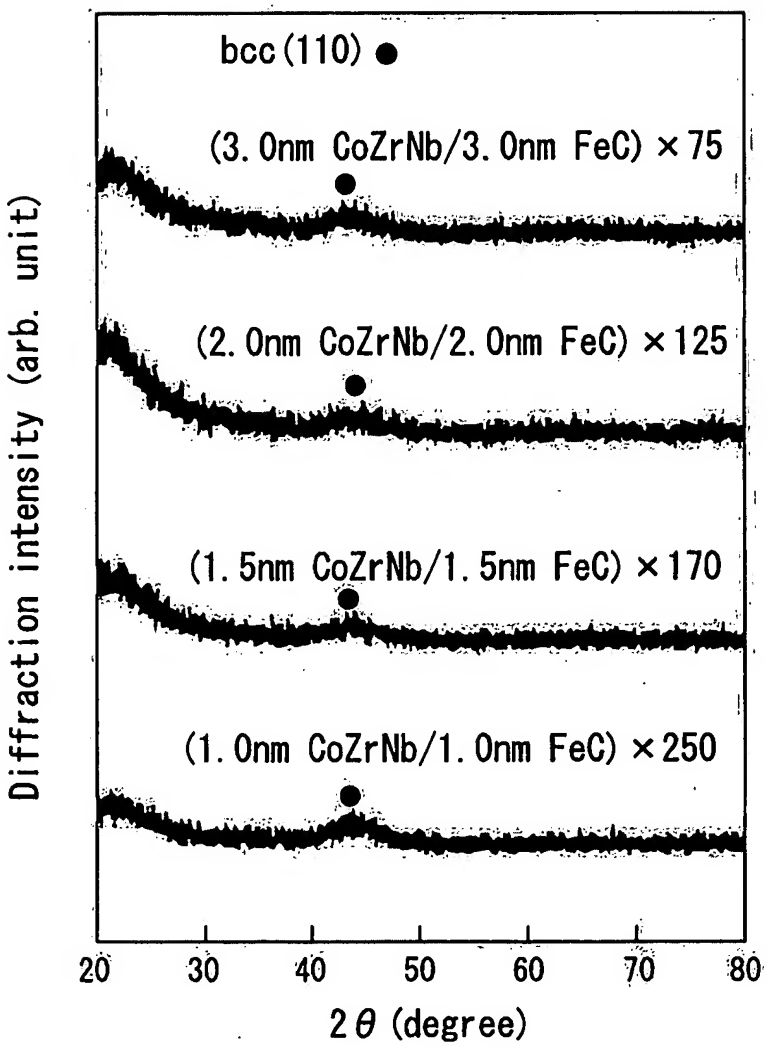
bcc (110)
(3.0nm CoZrNb/3.0nm FeC) ×75
(2.0nm CoZrNb/2.0nm FeC) ×125
(1.5nm CoZrNb/1.5nm FeC) ×170
(1.0nm CoZrNb/1.0nm FeC) ×250
Diffraction intensity (arb. unit)
20
30
40
50
60
70
80
2θ (degree)

FIG. 3

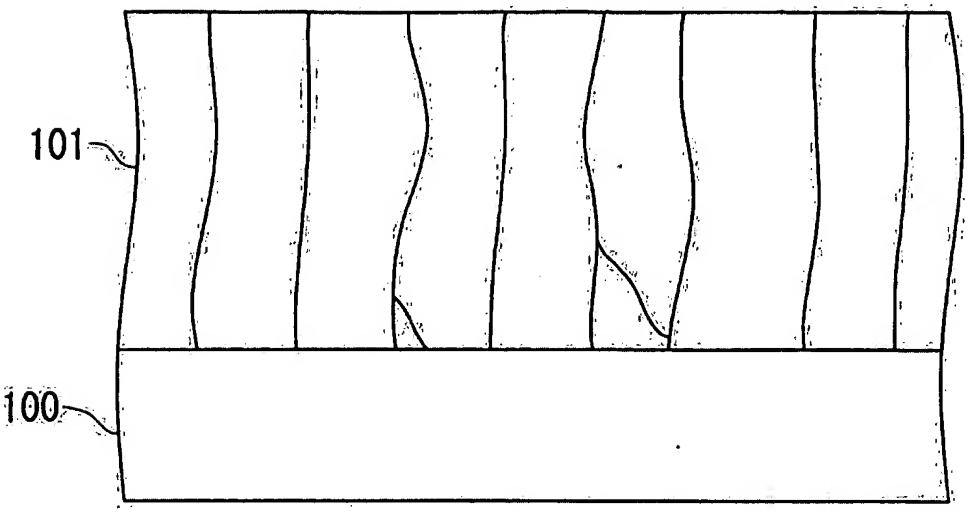

FIG. 4

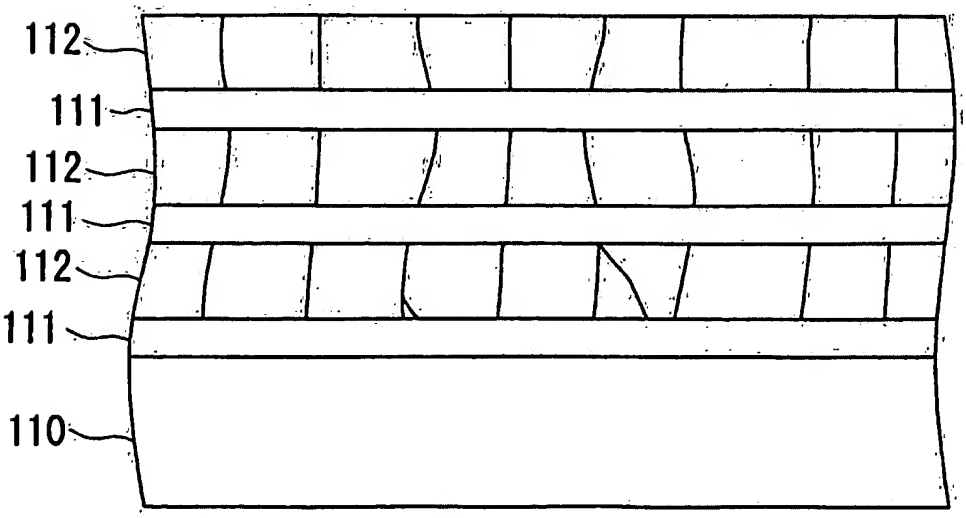

FIG. 5

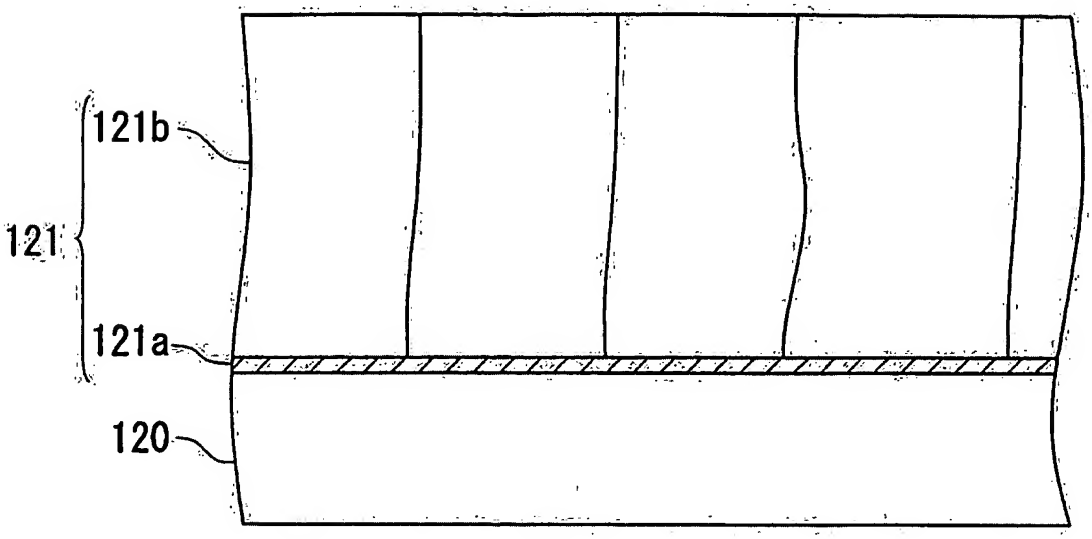

FIG. 6

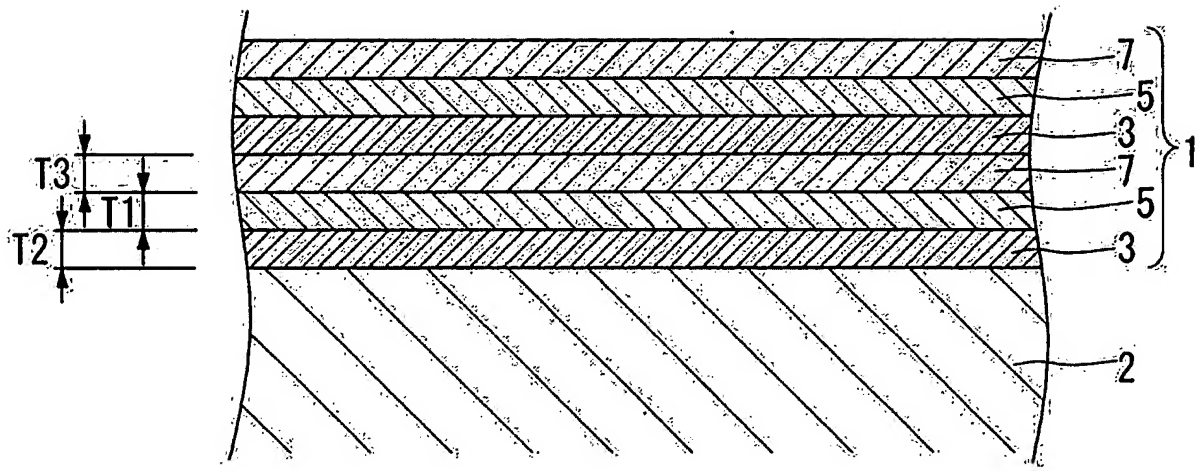

FIG. 7

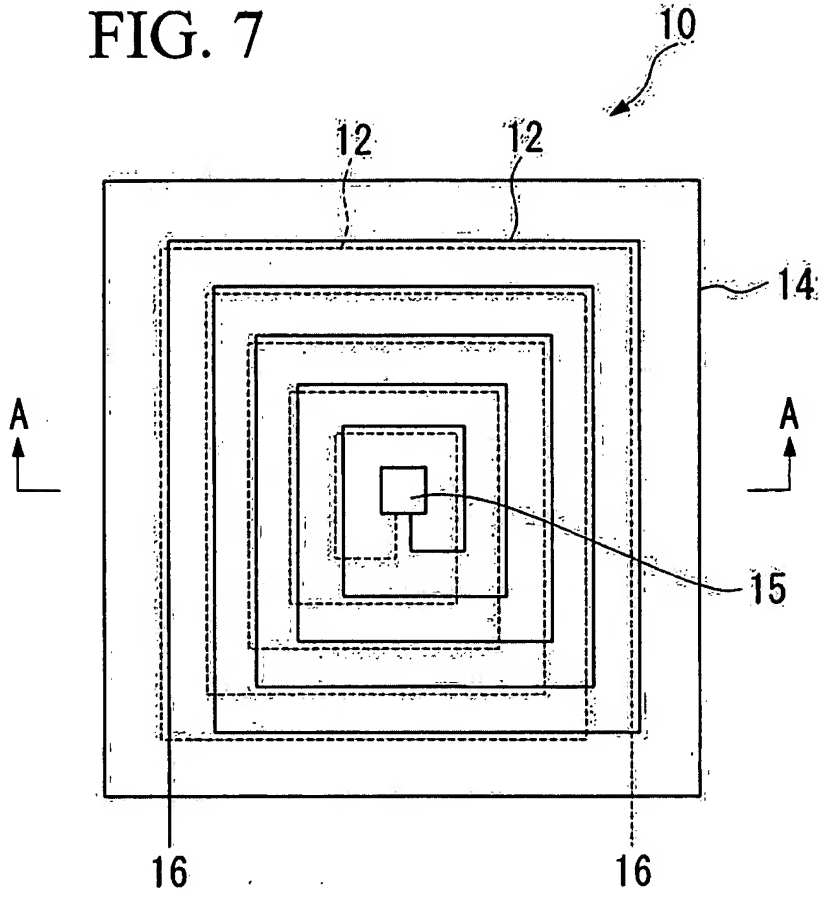

FIG. 8

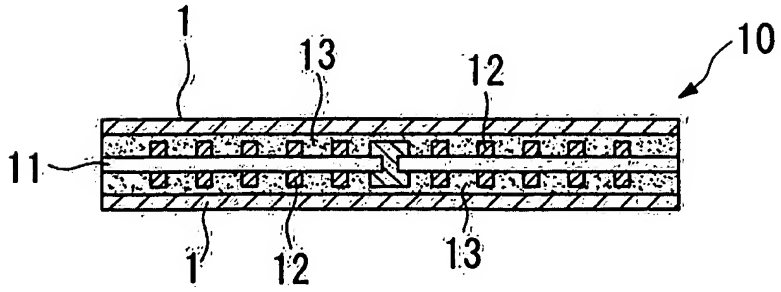

FIG. 9

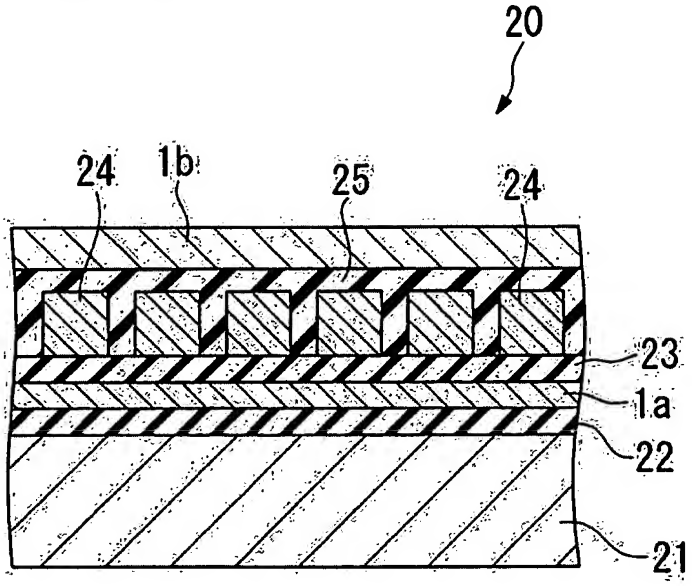

FIG. 10

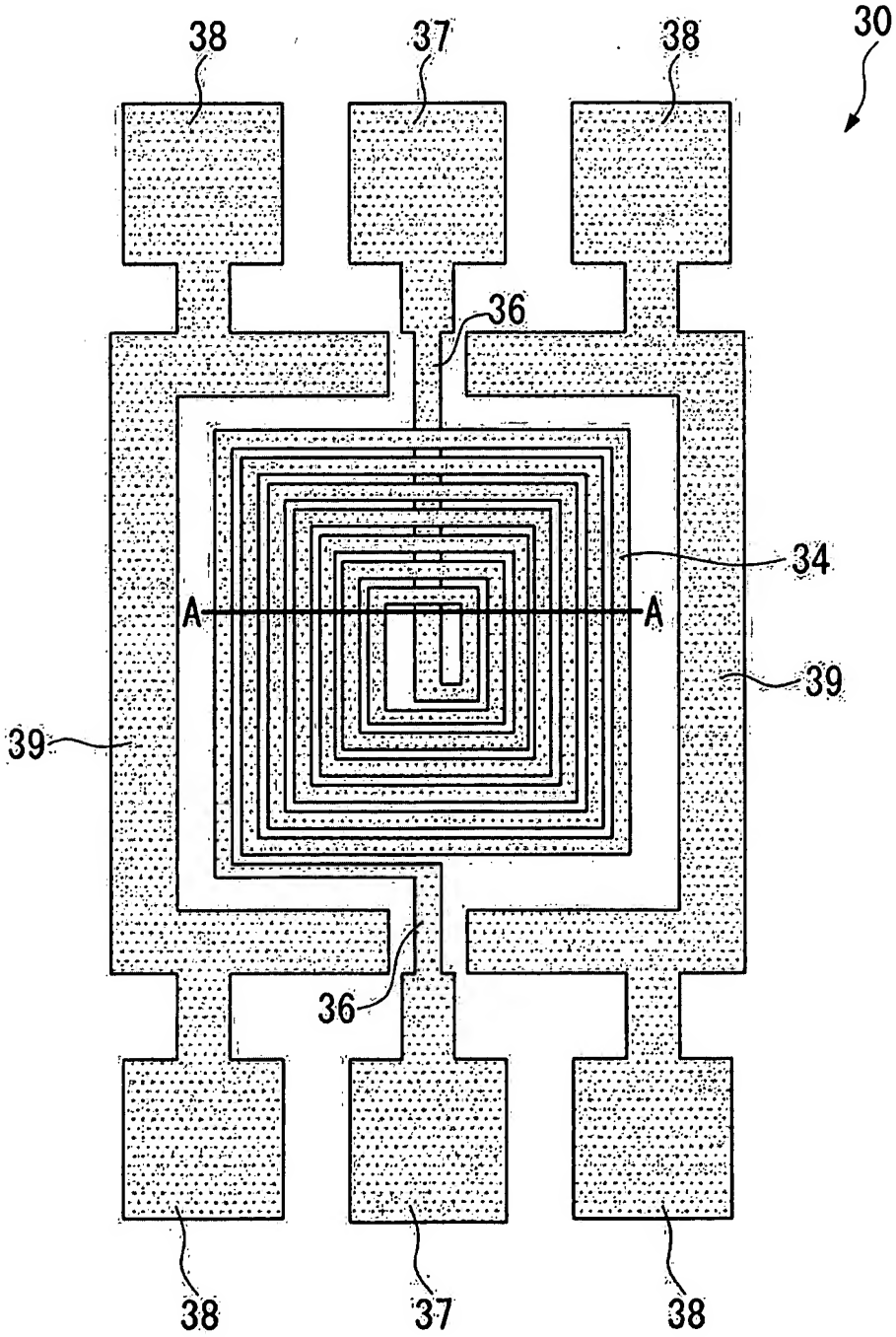

FIG. 11

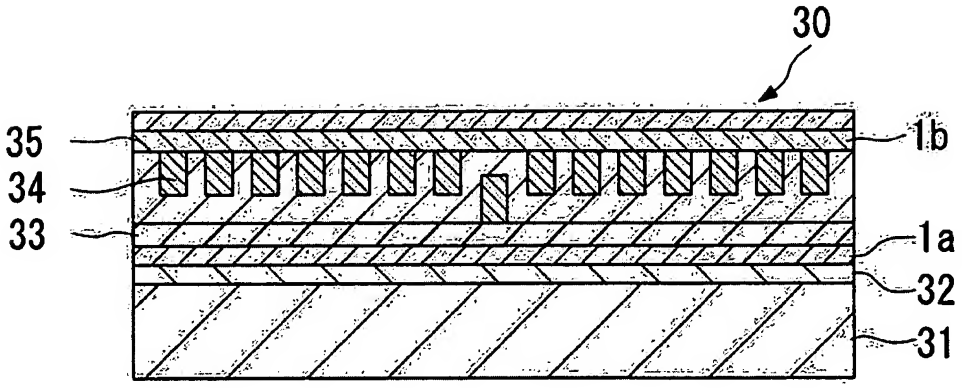

FIG. 12

	T-L composition layer 5		Co based amorphous alloy layer 3		High resistance layer 7		Magnetic thin film configuration
	Film composition	Thickness T1 (nm)	Film composition	Thickness T2 (nm)	Film composition	Thickness T3 (nm)	
Example 1	FeC	1.0	CoZrNb	1.0	FeCoAlO	1.0	[{(1.0nm CoZrNb/1.0nm FeC) × 2}+(1.0nm FeCoAlO)] × 100
Example 2	FeC	1.5	CoZrNb	1.5	FeCoAlO	1.0	[{(1.5nm CoZrNb/1.5nm FeC) × 3}+(1.0nm FeCoAlO)] × 50
Example 3	FeC	5.0	CoZrNb	20.0	FeCoAlO	2.0	(20.0nm CoZrNb/5.0nm FeC/2.0nm FeCoAlO) × 18
Example 4	FeC	50.0	CoZrNb	20.0	FeCoAlO	5.0	(20.0nm CoZrNb/50.0nm FeC/5.0nm FeCoAlO) × 7
Example 5	FeC	1.0	CoZrNb	1.0	SiO_2	1.0	[{(1.0nm CoZrNb/1.0nm FeC) × 2}+(1.0nm SiO_2)] × 100
Example 6	FeC	1.0	CoZrNb	1.0	SiO_2	1.0	(1.0nm CoZrNb/1.0nm FeC/1.0nm SiO_2) × 100
Example 7	FeC	50.0	CoZrNb	20.0	SiO_2	5.0	(20.0nm CoZrNb/50.0nm FeC/5.0nm SiO_2) × 7
Example 8	FeC	1.0	CoZrNb	1.0	Spontaneous oxide film	1.0	[{(1.0nm CoZrNb/1.0nm FeC) × 2}+ (1.0nm Spontaneous oxide film) × 100
Comparative Example 1	Fe	1.0	CoZrNb	1.0	—		(1.0nm CoZrNb/1.0nm Fe) × 250

FIG. 13

	T1／T2	High resistance layer proportion (vol%)	Magnetic properties		High frequency permeability properties				Resistivity (μΩcm)
			Saturation magnetization (T)	Coercive force Hce (Oe)	Resonance frequency (GHz)	μ' (at 1GHz)	μ" (at 1GHz)	Q (at 1GHz)	
Example 1	1.00	20.00	1.45	0.8	>>2.0	450	15	30	280
Example 2	1.00	10.00	1.50	1.0	>>2.0	500	20	25	240
Example 3	0.25	7.41	1.45	1.3	>>2.0	490	25	20	230
Example 4	2.50	6.67	1.55	1.5	>>2.0	420	20	21	210
Example 5	1.00	20.00	1.43	0.9	>>2.0	450	12	37	350
Example 6	1.00	33.30	1.40	1.0	>>2.0	400	10	40	500
Example 7	2.50	6.67	1.45	1.8	>>2.0	405	20	20	300
Example 8	1.00	20.00	1.45	0.9	>>2.0	450	12	37	350
Comparative Example 1	—	—	2.07	4.2	—	150	—	—	70

FIG. 14

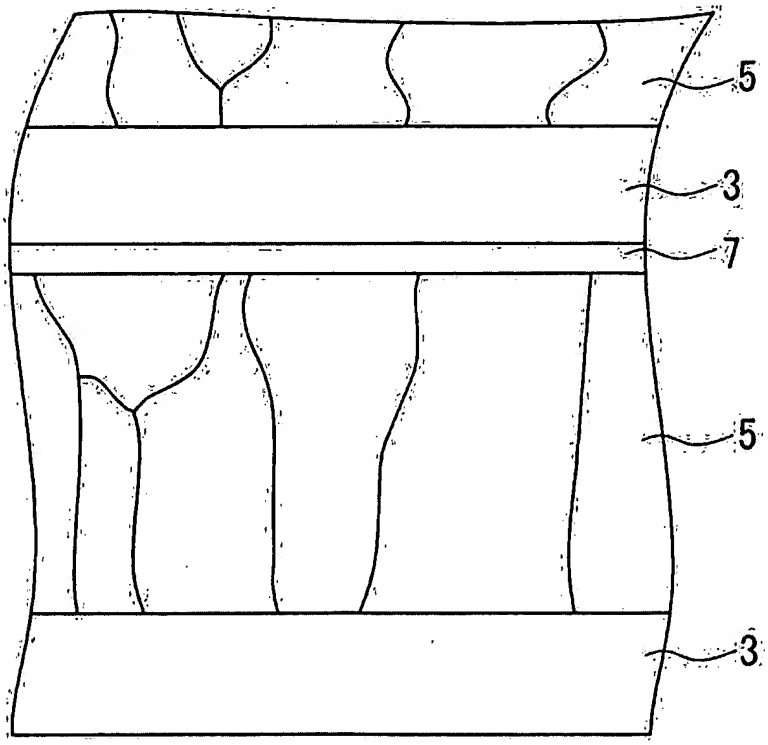

FIG. 15

	Magnetic thin film configuration	Magnetic properties		High frequency permeability properties				Resistivity ($\mu\Omega$cm)
		Saturation magnetization (T)	Coercive force Hce (Oe)	Resonance frequency (GHz)	μ' (at 1GHz)	μ'' (at 1GHz)	Q (at 1GHz)	
Example 9	[{(1.0nm CoZrNb/1.0 nmFeB)×2}+(1.0nm FeCoAlO)]×100	1.46	0.9	>>2.0	420	20	21	270
Example 10	(20.0nm CoZrNb/5.0nm FeB/2.0nm FeCoAlO)×18	1.52	1.1	>>2.0	450	15	30	220
Example 11	[{(1.0nm CoZrNb/1.0nm FeB)×2}+(1.0nm SiO_2)]×100	1.43	1.0	>>2.0	450	14	30	350
Example 12	(20.0nm CoZrNb/50.0nm FeB/5.0nm SiO_2)×7	1.45	1.8	>>2.0	380	20	19	340
Example 13	[{(1.0nm CoZrNb/1.0nm FeBN)×2}+(1.0nm FeCoAlO)]×100	1.51	1.3	>>2.0	320	15	21	280
Example 14	[{(1.0nm CoZrNb/1.0nm FeBC)×2}+(1.0nm FeCoAlO)]×100	1.46	0.8	>>2.0	440	20	22	280
Example 15	[{(1.0nm CoZrNb/1.0nm FeCN)×2}+(1.0nm FeCoAlO)]×100	1.50	1.4	>>2.0	350	20	17	270

FIG. 16

	Magnetic thin film configuration	Magnetic properties		High frequency permeability properties				Resistivity ($\mu\Omega$cm)
		Saturation magnetization (T)	Coercive force Hce (Oe)	Resonance frequency (GHz)	μ' (at 1GHz)	μ'' (at 1GHz)	Q (at 1GHz)	
Example 16	[{(1.0nm CoZrNb/1.0nm FeCoC)×2}+(1.0nm FeCoAlO)]×100	1.61	1.2	>>2.0	400	20	20	270
Example 17	[{(1.0nm CoZrNb/1.0nm FeCoB)×2}+(1.0nm FeCoAlO)]×100	1.60	1.4	>>2.0	350	20	17	270
Example 18	(20.0nm CoZrNb/5.0nm FeCoC/2.0nm FeCoAlO)×18	1.62	1.5	>>2.0	360	25	14	220
Example 19	(20.0nm CoZrNb/5.0nm FeCoB/2.0nm FeCoAlO)×18	1.61	1.7	>>2.0	320	20	16	220
Example 20	[{(1.0nm CoZrNb/1.0nm FeCoC)×2}+(1.0nm SiO_2)]×100	1.63	1.6	>>2.0	400	15	26	340
Example 21	[{(1.0nm CoZrNb/1.0nm FeCoB)×2}+(1.0nm SiO_2)]×100	1.62	1.8	>>2.0	380	15	25	340
Example 22	(20.0nm CoZrNb/50.0nm FeCoC/5.0nm SiO_2)×7	1.65	2.5	>>2.0	300	25	12	300
Example 23	(20.0nm CoZrNb/50.0nm FeCoB/5.0nm SiO_2)×7	1.64	2.7	>>2.0	280	25	11	300
Example 24	[{(1.0nm CoZrNb/1.0nm FeCoBN)×2}+(1.0nm FeCoAlO)]×100	1.62	1.2	>>2.0	400	25	16	260
Example 25	[{(1.0nm CoZrNb/1.0nm FeCoBC)×2}+(1.0nm FeCoAlO)]×100	1.60	1.4	>>2.0	380	25	15	250
Example 26	[{(1.0nm CoZrNb/1.0nm FeCoCN)×2}+(1.0nm FeCoAlO)]×100	1.63	1.3	>>2.0	350	22	16	260